

SmartConnect Use Case:
C7 – Utility Uses SmartConnect Data for Targeted Marketing Campaigns

December 29, 2009

Document History

Revision History

Revision Number	Revision Date	Revision / Reviewed By	Summary of Changes	Changes marked
(#)	(yymmdd)	(Name)	(Describe change)	(N)
0.1	081014	Grant Gilchrist	Initial draft from workshop on August 18, 2008	N
0.2	081107	Grant Gilchrist	Revisions from review on Oct 29, 2008	N
1.0	081121	Gary Arcega	Reviewed for signoff	Y
2.0	081229	Deborah Catanese	Edits to drafts previously reviewed by SMEs	Y

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1. Use Case Description

1.1 Use Case Title

Utility Uses SmartConnect Data for Targeted Marketing Campaigns

1.2 Use Case Summary

This use case describes scenarios in which the customer's usage history and characteristics are used to automatically improve the process of matching customers' rates and program options to their actual needs. This matching process may include the following activities:

- The utility targets marketing campaigns to those customers who are likely to make use of the marketed programs.
- The customer selects program and rate options recommended by the utility Web site or customer service representative (CSR).
- The utility identifies customers who are likely to benefit from an energy audit.

In each of these scenarios, the usage information measured by the SmartConnect system and the customer characteristics and interactions in the Customer Relationship Management (CRM) system serves as a mechanism to help ensure customers understand all the options available to them. Access to this data allows customizing the option or bundled options best suited to the customer's specific needs and their preferred method for receiving information about program options. The scenarios presented in this use case also allow the utility to measure the success of its marketing campaigns and match processes to make future improvements.

Using the SmartConnect system in this way provides the following value to the utility:

- Improves utility program results by signing up more high-value customers, thus avoiding peak MW's.
- Improves utility program results by using metrics to provide ongoing feedback for refining program strategies.
- Reduces marketing costs by avoiding marketing to ineligible customers.
- Increases customer satisfaction by using technology to lessen the effort required to participate in programs.
- Analyzes individual customer usage to automatically recommend targeted and bundled program options so the customer can determine projected benefits and savings to be realized by changing their behaviors.
- Uses marketing dollars more efficiently by transitioning from higher mass-marketing expenses to lower response rates, thereby recruiting more high-value, eligible customers with better response rates.

1.3 Use Case Detailed Narrative

In trying to match rate and program options to customer needs the utility is primarily interested in two types of data:

- The customer’s **usage history**. This consists of the kWh data recorded at 1-hour or 15-minute intervals and reported daily by the SmartConnect meters as described in the other use cases. It may also include average kW demand data for each interval, which can be calculated for each customer. The kWh usage data is gathered by the SmartConnect Network Management System (NMS), validated by the Meter Data Management System (MDMS), and stored in the Meter Data Warehouse. The MDMS calculates the demand kW data based on usage for the specified interval. Usage history, historical temperature/climate and event (outage, demand response, etc.) data for each interval can also be stored within the Meter Data Warehouse.
- The characteristics or **marketing attributes**, of the customer. Table 1 lists a sampling of the type of information that may be helpful in determining which customers could benefit most from a new rate structure or program.

Table 1 – Marketing Attributes and Location

Marketing Attribute	Current / Proposed location of the information
Customer’s location	CSS
Customer’s type of business (residential, restaurant, office building etc.)	CSS
Customer’s landlord/tenant status	CSS
Customer’s existing rates and programs	CSS
Customer’s billing and payment options	CSS
Customer’s previous participation in similar programs	CSS
List of customer’s registered load control or display devices	Device Management Subsystem
Estimate of the customer’s discretionary load	DRAACS
Estimate of the hours discretionary load is available	DRAACS
Indication whether the customer is using My Account on the Web site	CRM
Results of customer surveys taken through My Account or Energy Audit	CRM
List of previous marketing to this customer	CRM
The customer’s stated language preferences	CRM
The customer’s stated preferences for how they would like to be contacted	CRM

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Table 1 also shows how the customer’s marketing attributes are stored or measured in a variety of locations:

- The existing Customer Service System (CSS)
- The proposed Customer Relationship Management (CRM) system
- The Device Management Subsystem (potentially part of the MDMS or other existing system)
- The Demand Response Analysis and Control System (DRAACS)

This use case assumes that all information is assessable to the CRM from a common location. For the purpose of this use case, that common location is identified as the Meter Data Warehouse. The use case assumes that these various sources automatically transfer information to the warehouse; yet, it is conceivable that in the final system architecture, the data continues to reside in its source systems, and a single application retrieves it from the various locations.

In the primary scenario for this use case, the utility attempts to utilize customer usage and marketing attribute information to market a new program to the customers who are most likely to need it. The human actors are the program manger, who identifies new programs, the marketing product manager, who promotes the programs, and the market intelligence analyst, who helps identify target groups for the programs. At the request of the marketing product manager the CRM acts as the primary tool for managing and initiating the marketing campaign for the new program. It queries the Meter Data Warehouse for contact, participation and usage information for the target group of customers identified by metering attributes selected by the Marketing Intelligence Analyst.

Besides being able to identify which customers are more likely to use particular programs, the data available from the SmartConnect system also provides the means to evaluate program performance. Table 2 illustrates the types of actions each manager is interested in, and the questions the manager hopes to answer using SmartConnect and CRM data. Some of this information comes from the usage data gathered by the meters, other data comes from the execution of the programs themselves. This data is not measured by the SmartConnect system, but merely stored along with the usage data.

Table 2- Measures of Performance

Metric	Primary Interest	Description	Questions to be Answered
Campaign Performance	Marketing Product Manager	The response to the marketing campaign for a specialized demand response or rate program.	How many customers inquired about the program compared to the size of the group that was targeted? How many customers applied for the program?
Program Performance	Program Manager	The response to the program as a whole.	What were the statistics (average, maximum, minimum, etc.) on the response of customers in terms of the program’s goals, e.g. amount of usage reduction expected as a result of the program? How many customers are participating compared to the number that signed up? How many customers override and how many are passive non-participants?

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Metric	Primary Interest	Description	Questions to be Answered
Event Performance	Program Manager	The response to a given event within the program.	How did a customer or group of customers respond to a particular event such as a Critical Peak Price (CPP) day, e.g. how many customers participated, and how much was their usage reduced? How many customers override?

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1.3.1 Scenario Overview

This use case covers six scenarios. Only the steps for the first two scenarios are provided, because they identify the great majority of the requirements needed to implement the other scenarios.

1. **Marketing product manager targets a group of customers with a customized marketing campaign based on usage, and measures results.** This is the main scenario of this use case. With the aid of the SmartConnect system components the marketing organization plans, markets and measures a new program based on data found within the various customer metering databases.. The scenario includes the following capabilities that are also detailed as separate scenarios:
 - Customer receives marketing information on In-Home Display (IHD) through the SmartConnect system.
 - Program manager designs and measures the results of the new customer campaign based on data from the SmartConnect system. The program manager learns the number of targeted customers, customer queries, and customers applying to join the program after initiation of the campaign.
2. **Customer chooses program options from a list on a Web site tailored to the customer's usage history.** In this scenario, a customer accesses the utility Web site in order to find rate or program options that best suit their energy and budget needs. The Web site displays a list of options based on energy usage data stored in the Meter Data Warehouse and recommends the best options tailored to the customer's past usage and other preferences along with suggestions on how these options might differ with a change in customer behavior (e.g. with a 10% usage reduction during on-peak periods).
3. **Customer representative tailors customer program options to customer's usage history.** This scenario is an alternative to the second scenario. A CSR uses the same web interface provided to the customer to select options for a customer who phones with a high bill complaint. This scenario does not create any new requirements other than making the Web interface available to the CSR.
4. **Energy efficiency auditor targets customers for potential energy audits based on customer usage information.** This scenario differs from the second and third scenarios. In this case an energy auditor uses the same algorithm used by the utility Web site to identify customers whose energy use and bills could be lowered based on usage data recorded for those customers. The primary difference in this scenario is that the algorithm is not run for a single customer, but for large groups of customers, and the reports it generates are used by the energy auditor.

1.4 Business Rules and Assumptions

- All usage data used for marketing purposes will be validated by the MDMS before use.
- The utility has installed SmartConnect Meters at all customer locations which record and provide interval-based usage data.
- For the purposes of this case, all customer usage history and attributes/characteristics information will be available for analysis and querying from a common location referred to as the Meter Data Warehouse.
- The utility may only provide customer information to third parties interested in marketing demand response and other services to those customers with the explicit permission from each and every participant.

2. Actors

<i>Actor Name</i>	<i>Actor Type (person, device, system etc.)</i>	<i>Actor Description</i>
Customer	Person	Residential or small business energy user that contracts to receive electrical service from a utility and agrees to have a SmartConnect meter installed. May or may not participate in programs provided by the utility such as pricing events, load control or distributed generation.
Customer Device Communication System (CDCS)	System	The communications method that notifies customers of demand response events and other related messages. Tracks and uses customer selected preferences for notification (e.g. pager, email, SmartConnect Meter, IHD, EMS, etc.).
Customer Service System (CSS)	System	Maintains customer contact information, calculates and formats customer bills, receives and applies payments for individual accounts. The system is responsible for storing customer information such as site data, meter number and rates.
Customer Relationship Management (CRM)	System	Maintains detailed information about each customer including customer class, demand response program participation, use of distributed generation, load types, and demographics. In the future it may include information presently stored in the CSS.
Customer Service Representative (CSR)	Person	Utility personnel that respond to customer complaints, outage notifications, and customer requests to activate, modify and/or terminate delivery of service. CSRs also enroll customers in utility sponsored programs and answer questions related to the customer's energy consumption and cost data. Many off-cycle reading, billing, work orders and diagnostics requests are initiated by CSRs in response to customer contact.
Demand Response Availability And Control System (DRAACS)	System	Sends demand response event notifications to meters and load control devices through the SmartConnect system. Provides demand response options to operators, market traders, etc. based on predefined groupings of customers and statistical analysis of how those customers have responded in the past. Responsible for estimating, with precision, how much demand response resource is available for dispatch. Accepts requests for blocks of energy and handles the details of implementing requests by issuing load control signals. It is expected that in order to refine its internal model, the DRAACS will track "as implemented" responses to load control signals.

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<i>Actor Name</i>	<i>Actor Type (person, device, system etc.)</i>	<i>Actor Description</i>
In-Home Display	Device	A device installed at the customer's home or business allowing communication with the SmartConnect meter and monitoring usage and cost data, utility transmitted text messages including reliability or economic events, planned outages, and other useful energy information. Data is passed to this device via the SmartConnect Meter. Utility approved to connect to the SmartConnect network and receive data and communication from the utility.
Program Manager	Person	Utility employee who is responsible for identifying potential new customer programs such as time-of-use metering or demand response. May be a representative of various organizations within the utility.
Load Control System (LCS)	System	Executes and monitors requested demand response resources. Sends out demand response event notifications to meters and customers.
Marketing Product Manager	Person	Utility employee responsible for implementing the marketing campaign associated with a given program.
Market Intelligence Analyst	Person	Utility employee responsible for determining what sets of customers are most likely to respond to a newly defined rate or program.
Meter Data Management System (MDMS)	System	Gathers, validates, estimates and permits editing of meter data such as energy usage, generation, and meter logs. Stores this data for a limited amount of time before it goes to a data warehouse and makes this data available to authorized systems.
Meter Data Warehouse	System	Location where all raw and aggregated meter data is stored. Responsible for long-term storage of meter data including energy usage, demand, generation, events, logs, and other time-related information measured by the meter or calculated from that data. Does not contain information on the configuration, management, diagnostics, and maintenance of the meters themselves. Includes certain software applications responsible for filtering, analyzing, and reporting meter data.
SmartConnect Meter	Device	Advanced electric revenue meter capable of two-way communications with the utility. Serves as a gateway between the utility, customer site, and customer's load controllers. Measures, records, displays, and transmits data such as energy use, generation, text messages, event logs, etc. to authorized systems (i.e., the SmartConnect NMS) and provides other advanced utility functions.

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<i>Actor Name</i>	<i>Actor Type (person, device, system etc.)</i>	<i>Actor Description</i>
SmartConnect Network Management System (NMS)	System	The utility's back-office system responsible for two-way communications with SmartConnect Meters to retrieve data and execute commands. Balances load on the communications network resulting from scheduled meter reads. It retries meters during communications failures and monitors the health of the advanced metering infrastructure. Remotely manages and implements firmware updates, configuration changes, provisioning functions, control and diagnostics.
Utility	System	A generic term referring to the collection of systems, business functions, and organizations that form an electric utility organization. The term is used whenever the precise actor is unknown or many actors utilize a particular service.

3. Step-by-Step Analysis of Each Scenario

3.1 Primary Scenario: Marketing product manager targets a group of customers with a customized marketing campaign based on usage, and then measures the results

This is the main scenario described in the narrative of this use case, in which the marketing organization plans, markets and measures a new program based on data found within the various customer metering databases and with the aid of the SmartConnect system components.

<i>Triggering Event</i>	<i>Primary</i>	<i>Pre-Condition</i>	<i>Post-Condition</i>
<i>Identify the name of the event that initiates the scenario</i>	<i>Identify the actor whose point-of-view is primarily used to describe the steps</i>	<i>Identify any pre-conditions or actor states necessary for the scenario to start</i>	<i>Identify the post-conditions or significant results required to complete the scenario</i>
Program manager sets goals for a new program and gives them to the assigned marketing product manager.	Marketing Product Manager	Information on customer marketing attributes and program participation history is available in the Meter Data Warehouse. Some customers have registered their IHD with the utility and have them identified as their default method of contact.	Marketing campaign is complete and program is underway. Program manager can measure the effectiveness of the campaign, and marketing product manager can measure the customer's average participation in the program or their specific response to a particular event.

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3.1.1 Steps for this scenario

<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
1	Program Manager	Provides enrollment goals and eligibility rules to the marketing product manager and market intelligence analyst.	Enrollment goals include MW, enrollments, number of customers, number of service accounts, number of applications, and sign-ups. Eligibility rules include how much load, and which programs are compatible.
2	Marketing Intelligence Analyst	Queries the Meter Data Warehouse to develop a list of marketing attributes and characteristics that define a likely target group for the program.	Possible marketing attributes are defined in the narrative of this use case. Some are not yet available; the need for this information has been captured as functional requirements. Note: assumptions that customer's usage history, CRM information, and other attribute info are all available in the Meter Data Warehouse.
3	Meter Data Warehouse	Responds to queries from market intelligence analyst.	Provides information and marketing attributes in response to requests from marketing intelligent analyst.
4	Market Intelligence Analyst	Analyzes trends, strategies and geography. Produces list of proposed marketing attributes for marketing product manager that meet the goals of the program.	See Table 1 in <i>Narrative</i> for a sample list of marketing attributes.
5	Marketing Product Manager	Creates a marketing campaign in the CRM, supplying the marketing attributes of the target group and a list of preferred communications channels.	
6	CRM	Queries the Meter Data Warehouse for customers matching the marketing attributes chosen for the program.	Attributes in CRM may be associated with a customer and/or premise. List may be shared with third parties with customer's approval.
7	Meter Data Warehouse	Responds to queries from the CRM.	

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
8	CRM	Creates target group for the program based on the response to the query.	
9	Marketing Product Manager	Executes campaign through the CRM.	
10	CRM	Sends marketing message to the CDCS, identifying customers to be contacted and their preferred communications method.	CDCS as defined in use case C5/C6 may also be involved in this communication pathway.
11	CDCS	Sends marketing message to each customer using the customer's preferred communications method. This may include phone, pager, e-mail, etc. or the customer's IHD via the SmartConnect NMS and Meter.	
12	Customer	Inquires about program through CSR or Web portal.	Note: Customer may or may not have received marketing notice at time of inquiry.
13	CSR/Utility Web Site	Stores and confirms customer inquiry information in CRM.	Used for measuring effectiveness of the campaign.
14	Customer	Applies for participation in program.	
15	CSR/Utility Web Site	Stores customer application information in CRM and CSS as required.	Used for measuring effectiveness of the campaign.
16	Customer/Utility	Installs and registers customer HAN device(s) for participation in program if customer HAN devices are required for specified program.	Utility may offer installation assistance to customers; use cases C5/C6 provide additional detail about HAN device registration. Registration includes storing customer/device information in the utility system.
17	Marketing Product Manager	Queries CRM for campaign performance.	
18	CRM	Responds to query for campaign performance.	
19	LCS	As the need for an event arises, the system sends a program event to SmartConnect NMS.	e.g. Critical Peak Price

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
20	SmartConnect NMS	Forwards event messages to meter.	
21	Meter	Forwards event messages to any load control equipment registered to an IHD and/or EMS.	
22	LCS	Sends a human-readable notice of the program event to the CDCS.	
23	CDCS	Sends program event notice to the customer using the customer's preferred means of communication.	Includes SmartConnect NMS, meter and IHD if selected.
24	Customer	Reduces demand, passively does not respond, or actively overrides event signal.	
25	MDMS	After the event, MDMS stores event response data in the Meter Data Warehouse.	
26	LCS	Marks usage data for the selected customers and intervals in the Meter Data Warehouse to identify that it was gathered during the event.	
27	Program Manager	Queries Meter Data Warehouse for program or event performance.	Note: <ul style="list-style-type: none"> • Program performance is for multiple past events • Event performance is for a single and specific past event
28	Meter Data Warehouse	Responds to query for program or event performance.	
29	Program Manager	Revises and updates marketing criteria for subsequent marketing campaigns to market/educate customers for improved participation and event performance.	

3.2 Primary Scenario: Customer chooses program options on Web site from a list suggested by the customer's usage history

In this scenario, a customer has a high bill complaint and accesses the utility Web site in order to find rate or program options that could lower their energy bill. The Web site displays a list of options based on energy usage data stored in the Meter Data Warehouse. This scenario does not create any new requirements for the SmartConnect system other than making the Meter Data Warehouse query interface available to the utility Web site. The algorithm used by the utility Web site to determine what options to recommend, is not yet defined. No steps are provided for this scenario.

<i>Triggering Event</i>	<i>Primary</i>	<i>Pre-Condition</i>	<i>Post-Condition</i>
<i>Identify the name of the event that initiates the scenario</i>	<i>Identify the actor whose point-of-view is primarily used to describe the steps</i>	<i>Identify any pre-conditions or actor states necessary for the scenario to start</i>	<i>Identify the post-conditions or significant results required to complete the scenario</i>
Customer accesses the utility Web site in search of rate/program options that best suits their energy consumption needs.	Customer	Customer has SmartConnect meter installed that has recorded several months of energy use.	Customer selects program options that best suits their specific energy consumption needs.

3.2.1 Steps for this scenario

<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
1	Customer	Accesses utility Web site in search of rate, program, and/or bundle options that best suits their energy consumption needs.	The CSR may do this on behalf of the customer, per scenario 3.3.
2	Utility Web Site	Stores customer inquiry information in CRM.	
3	Utility Web Site	Queries the Meter Data Warehouse for the customer's usage history, attributes and preferences.	

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
4	Meter Data Warehouse	<p>The following prioritized responses are used for customer comparisons:</p> <ul style="list-style-type: none"> • Customer usage history • Costs for eligible rates/programs/bundles • Predicted customer usage history and costs when a configurable behavior is applied 	It may not be the warehouse itself, but a stand-alone application that makes the calculations.
5	Utility Web Site	Displays current program choices and rate/program/bundle options and costs for the customer.	
6	Customer	Reviews options and makes changes to rates, programs, and other preferences.	
7	Utility Web Site	Stores customer rate/program change information in CRM and CSS.	
8	Customer	Registers load control devices or IHD if required for a specific program.	

3.3 Alternate Scenario: Customer representative tailors customer program options to customer’s usage history

This scenario is an alternative to the second scenario in which a CSR uses the same Web interface provided to the customer to select options for a customer who phones with a high bill complaint. This scenario does not create any new requirements other than making the Web interface available to the CSR. There are no steps for this scenario.

<i>Triggering Event</i>	<i>Primary</i>	<i>Pre-Condition</i>	<i>Post-Condition</i>
<i>Identify the name of the event that initiates the scenario</i>	<i>Identify the actor whose point-of-view is primarily used to describe the steps</i>	<i>Identify any pre-conditions or actor states necessary for the scenario to start</i>	<i>Identify the post-conditions or significant results required to complete the scenario</i>
Customer calls CSR wanting to lower their energy bill.	Customer	Customer has SmartConnect meter installed that has recorded several months of usage history.	Customer selects program options for a lower energy bill.

3.4 Alternate Scenario: Energy Efficiency Auditor uses SmartConnect data to recommend additional services

This scenario is another alternative to the second scenario in which an energy auditor uses the same algorithm used by the utility Web site to identify customers whose energy use and bills could be lowered, based on the usage data recorded for those customers. The primary difference in this scenario is the algorithm is not run for a single customer, as in the case of the utility Web site or the CSR scenarios, but is run for large groups of customers and provides a report to be used by the energy auditor. There are no steps for this scenario.

<i>Triggering Event</i>	<i>Primary</i>	<i>Pre-Condition</i>	<i>Post-Condition</i>
<i>Identify the name of the event that initiates the scenario</i>	<i>Identify the actor whose point-of-view is primarily used to describe the steps</i>	<i>Identify any pre-conditions or actor states necessary for the scenario to start</i>	<i>Identify the post-conditions or significant results required to complete the scenario</i>
Energy efficiency auditor requests a report from the Meter Data Warehouse identifying customers whose energy bills or usage could be lowered.	Energy Efficiency Auditor	Customers have SmartConnect meters installed that report usage data on a regular basis.	The Meter Data Warehouse provides the energy efficiency auditor with a list of customers who should be audited.

4. Requirements

4.1 Functional Requirements

<i>Functional Requirements</i>	<i>Associated Scenario # (if applicable)</i>	<i>Associated Step # (if applicable)</i>
<p>The Meter Data Warehouse shall provide access to the customer’s usage history. This includes the following data after it has been VEE’d:</p> <ul style="list-style-type: none"> • The KWh supplied and any excess kWh, measured at intervals • Average kW demand per interval • Same information for any sub-metered equipment 	1	4,8
<p>The Meter Data Warehouse shall provide access to usage history aggregated by the customer’s account (one value if there are multiple meters per customer).</p>	1	4,8
<p>When a customer reacts to demand response events initiated by LCS, the Meter Data Warehouse shall provide access to the following information:</p> <ul style="list-style-type: none"> • Whether the customer participated • How much load was dropped • Speed at which load drop occurred • How long the load remained dropped • Whether the customer overrode the event • Whether the customer response was manual or automated (via Programmable Communicating Thermostat (PCT)) 	1	4,8
<p>The Meter Data Warehouse shall provide access to the following information found in the CSS for each customer:</p> <ul style="list-style-type: none"> • Location • Customer type • Existing rates and programs enrolled in • Billing and payment options • Landlord/tenant status 	1	4,8

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<i>Functional Requirements</i>	<i>Associated Scenario # (if applicable)</i>	<i>Associated Step # (if applicable)</i>
The Meter Data Warehouse shall permit the CRM or market intelligence analysts to perform on-demand queries of customer marketing attributes (marketing model). These could target those customer characteristics that help meet the goals of proposed programs.	1	4,8
The Meter Data Warehouse shall be able to calculate the amount of the customer's discretionary load and its potential period of availability based on the actual load use, demand response and other historical factors such as program enrollment.	1	4,8
The CRM shall store and provide access to each customer's attributes, including but not limited to: <ul style="list-style-type: none"> • Contact preferences • Interaction log • Marketing campaign history • Language preferences • Survey results • Equipment history • Distributed generation/net energy metering participation. These items can be stored elsewhere until the CRM is deployed.	1	6
The CRM shall store and provide access those attributes associated and consistent with the customer's, preferences regardless of their premise location (language, contact, etc.).	1	6
The CRM shall store and provide access to the attributes associated and consistent with premise locations, regardless of the customer associated with that premise at any given time (Equipment/HAN devices, PCT).	1	6
The CRM shall store and provide access to specific customer attributes for multiple individuals or a single customer account (e.g. different family members at a single residence).	1	6
The CRM shall allow the Marketing Product Manager to create and designate a set of marketing attributes to be associated with a particular marketing campaign.	1	6
The CRM shall query the Meter Data Warehouse for lists of customers matching a given set of marketing attributes (the marketing model) and usage history levels/patterns, and designate this list as the marketing campaign's target group.	1	7, 9
The CRM and CDCS shall allow the marketing product manager to execute a marketing campaign through a variety of communications channels, including the SmartConnect NMS.	1	10, 11, 12

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<i>Functional Requirements</i>	<i>Associated Scenario # (if applicable)</i>	<i>Associated Step # (if applicable)</i>
The SmartConnect NMS shall forward marketing messages from the CRM to selected meters and to any applicable customer HAN devices at the request of the CRM.	1	12
The meter shall forward any messages sent to a customer from the utility to the customer's HAN-based in-home display or energy management system.	1	12
The utility Web site shall permit customers or CSRs to record in the CRM customer inquiries about specific programs.	1 2	14 1, 2
The utility Web site shall permit customers or CSRs to record when customers apply for specific programs in the CRM.	1	16
The CRM shall maintain a contact history for each customer so the CSS, CSR, or utility Web site can make updates whenever a customer inquires about specific programs.	1	14, 16
The CRM shall permit Marketing Product Managers to query the performance of a marketing campaign and indicate the number of customers in the target group, customer inquiries about a program (contact rate) and program applications (conversion rate). This includes information on channels used in the campaign, as well as their performance/effectiveness.	1	18
The SmartConnect NMS, MDMS, DRAACS and LCS shall collaborate to ensure the Meter Data Warehouse contains information linking customer usage history to particular demand response program events, so the performance of the demand response events and program can be evaluated.	1	27
The Meter Data Warehouse shall permit the program manager, CRM and other applications to query program performance on demand, including such metrics as the average, maximum, and minimum demand and usage reductions achieved by the program. It allows the user to forecast usage based on factors calculated from load drop.	1	28
The Meter Data Warehouse shall permit the program manager to query the performance of individual events within a particular program (e.g. CPP events), including which customers responded, how much load was dropped and how long the event lasted.	1	28
The Meter Data Warehouse shall provide the usage data history for a particular customer and time period on request. It shall make this information available to energy auditors as a report on multiple customers.	2 4	4 --

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<i>Functional Requirements</i>	<i>Associated Scenario # (if applicable)</i>	<i>Associated Step # (if applicable)</i>
The Meter Data Warehouse or an associated application shall provide upon request a prioritized list of eligible rates, programs and bundles for a specific customer, including energy costs. It shall make this information available to energy auditors as a multi-customer report. The list's priorities shall be based on the customer's historical usage, characteristics, program eligibility, and other factors.	2 4	4 --
The Meter Data Warehouse or an associated application shall provide upon request the predicted usage and resulting costs for a specified customer. It shall make this information available to energy auditors as a multi-customer report. The predictions shall be based on the customer's usage history and a specified change in behavior such as overall reduction in use, shifting usage to non-peak hours, and a certain degree of participation in a demand response program.	2 4	4 --
The utility Web site shall permit customers to choose from a recommended list of program and rate options to lower the customer's energy bill based on their usage history data provided by the Meter Data Warehouse.	2	3, 5
The utility Web site shall provide an interface to CSR allowing them to choose data from a recommended list of program and rate options that could help lower the customer's energy bill based on their usage history.	3 2	-- 1
Meter Data Warehouse shall store information about what customer devices (HAN display, energy management and load control devices) a customer has registered with the utility, including information about whether the device can display utility messages. The source of this information has not yet been defined – it could be the utility Web site, CSS, CRM, or Device Management Subsystem.	1	Pre-condition

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4.2 Non-Functional Requirements

<i>Non-Functional Requirements</i>	<i>Associated Scenario # (if applicable)</i>	<i>Associated Step # (if applicable)</i>
The Meter Data Warehouse shall contain 13 months of historical usage data for a given customer before marketing product managers are allowed to use a customer's information as a factor for including that customer in targeted marketing campaigns.	1	6
Queries for marketing attributes or target groups shall not affect performance of the meter-to-cash process.	1	4,8
The Meter Data Warehouse shall return marketing attribute queries or customer list queries within 24 hours.	1	4,8
The Meter Data Warehouse shall permit marketing of attribute or customer list queries, about 50-150 times per day.	1	4,8
The Meter Data Warehouse shall permit daily queries of program performance for approximately 100 programs.	1	26
The program manager shall run weekly, monthly and annual analytics to determine the status of the programs in the Meter Data Warehouse.	1	26
The MDMS shall update the Meter Data Warehouse with usage history data on a weekly basis, at minimum.	2	4
The Meter Data Warehouse shall at a minimum, be updated daily with attribute data such as customer and program information, new customers/meters, HAN device information.	1	7

5. Use Case Models (optional)

This section is used by the architecture team to detail information exchanged, actor interactions and sequence diagrams.

5.1 Information Exchange

For each scenario detail the information exchanged in each step.

This table will need to be updated along with updates to the steps and requirements. It should also be kept in synch with the sequence diagram.

Scenario #	Step #, Step Name	Information Producer	Information Receiver	Name of Information Exchanged
#	Name of the step for this scenario.	What actors are primarily responsible for producing the information?	What actors are primarily responsible for receiving the information?	Describe the information being exchanged.
1	1	Program Manager	Marketing Product Manager	Program goals: <ul style="list-style-type: none"> • MW • Enrollments • Customers • Applications • Eligibility rules
1	2	Marketing Product Manager	Market Intelligence Analyst	Request for target attributes
1	3	Market Intelligence Analyst	Meter Data Warehouse	Queries for: <ul style="list-style-type: none"> • Market attributes (see Table 1) • Usage history by market attribute
1	4	Meter Data Warehouse	Market Intelligence Analyst	Query responses
1	5	Market Intelligence Analyst	Marketing Product Manager	Target attributes for new programs
1	6	Marketing Product Manager	CRM	Campaign requests, including target attributes

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<i>Scenario #</i>	<i>Step #, Step Name</i>	<i>Information Producer</i>	<i>Information Receiver</i>	<i>Name of Information Exchanged</i>
1	7	CRM	Meter Data Warehouse	Query – list of customers matching target attributes
1	8	Meter Data Warehouse	CRM	Response – list of customers matching target attributes including contact information
1	11	CRM	CDCS	Marketing message
1	12	CDCS	SmartConnect NMS	Marketing message
1	12	SmartConnect NMS	Meter	Marketing message
1	12	Meter	IHD	Marketing message
1	13	Customer	CSR, Utility Web Site	Program inquiry
1	14	CSR, Utility Web Site	CRM	Program inquiry
1	15	Customer	CSR, Utility Web Site	Program choice
1	16	CSR, Utility Web Site	CRM	Program choice
1	17	Customer	CSR, Utility Web Site	Device registration
1	17	CSR, Utility Web Site	CSS	Device registration
1	17	CSS	Meter Data Warehouse	Device registration
1	17	Meter Data Warehouse	LCS	Device registration
1	18	Marketing Product Manager	CRM	Request campaign performance
1	19	CRM	Marketing Product Manager	Campaign performance <ul style="list-style-type: none"> • Customers in target group • Customer inquires • Customer conversion
1	20	LCS	SmartConnect NMS	Program event
1	21	SmartConnect NMS	Meter	Program event
1	22	Meter	IHD and Load Control Device	Program event
1	23	LCS	CDCS	Event notice – human readable
1	24	CDCS	SmartConnect NMS	Event notice
1	24	SmartConnect NMS	Meter	Event notice

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<i>Scenario #</i>	<i>Step #, Step Name</i>	<i>Information Producer</i>	<i>Information Receiver</i>	<i>Name of Information Exchanged</i>
1	24	Meter	IHD	Event notice
1	24	IHD	Customer	Event notice
1	25	Meter	SmartConnect NMS	Usage history
1	25	SmartConnect NMS	MDMS	Usage history
1	26	MDMS	Meter Data Warehouse	Usage history – validated
1	27	LCS	Meter Data Warehouse	Program event – mark affected intervals as having been recorded during the event
1	28	Marketing Product Manager	CRM	Request program or event performance
1	28	CRM	Meter Data Warehouse	Query – program events and usage history
1	29	Meter Data Warehouse	CRM	Response – program events and usage history
1	29	CRM	Marketing Product Manager	Program or event performance
2	1	Customer	Utility Web Site	Program inquiry
2	2	Utility Web Site	CRM	Program inquiry – log of action
2	3	Utility Web Site	Meter Data Warehouse	Program inquiry
2	4	Meter Data Warehouse	Utility Web Site	Program options and costs <ul style="list-style-type: none"> • Usage history • Eligible rates/programs/bundles • Costs of option • Predicted usage and costs based on specified behavior change
2	5	Utility Web Site	Customer	Program options and costs
2	6	Customer	Utility Web Site	Program choices
2	7	Utility Web Site	CRM, CSS	Program choices
2	8	Customer	Utility Web Site	Device registration
2	8	Utility Web Site	CSS, Meter Data Warehouse	Device registration

6. Use Case Issues

Capture any issues with the use case. Specifically, those unresolved issues that help the use case reader understand the constraints or unresolved factors that impact the use case scenarios and their realization.

<i>Issue</i>
<i>Describe the issue as well as any potential impacts to the use case.</i>
Need to define rules for selecting recommended rate and program options based on customer usage history.
Besides tracking demand response events and programs, need to track time-of-use rate customers and program performance.
Need to designate an interim storage location for CRM information until the CRM is deployed.
Need to clarify what customer usage history will be stored in the Meter Data Warehouse and how it will be stored based on other use cases.

7. Glossary

Insert the terms and definitions relevant to this use case. Please ensure that any glossary item added to this list should be included in the global glossary to ensure consistency between use cases.

Glossary	
Term	Definition
Customer Interaction Log	A log stored within the CRM that records every customer contact and actions taken.

8. References

Reference any prior work (intellectual property of companies or individuals) used in the preparation of this use case.

9. Bibliography (optional)

Provide a list of related reading, standards, etc. that the use case reader may find helpful.